sine, or rise of the arch, too low: on most occasions they are 1¼ inches to the foot. But, in order to insure perfect security, we should advise, in all future buildings of this description, that the rise be 1½ in. to every foot of span. In the arch which first gave way, the rise was only a small fraction above an inch, having a rise of only 12 inches in a span of 11 feet 6 inches.

On viewing the columns, several imperfections were observed in the variable thickness of the metal; but, in other respects, the pillars were satisfactory, and presented no features of weakness indicating danger from those parts: one inch more in diameter, with the same weight of metal would, however, have given greater security and greater strength.

We cannot close this report without adverting to the anxious solicitude of Messrs. Radcliffe, and the strong desire evinced by those gentlemen to have every part of the structure upon the first and strongest principle; and we should imperfectly discharge our duty if we neglected on this occasion to bear testimony to the superior strength of all parts of the building, except those we have just described, and on which it could not be expected they could form an opinion.

In conclusion, we have great pleasure in stating that it appears to us that no pecuniary considerations whatever were present to the minds of Messrs. Radcliffe in the due and perfect construction of these mills.

WM. FAIRBAIRN,
DAVID BELLHOUSE.

Manchester, Nov. 6th, 1844.

ERECTION OF SCHOOLS AT WINDSOR BY COMMAND OF HER MAJESTY.

HER Majesty and Prince Albert have long contemplated the erection of schools in a convenient situation on the Royal domains, for the education of the park and gamekeepers' children. A spot well adapted for such a purpose having been selected at the west end of the gardens, at Cumberland Lodge, about a mile from the statue of George IV., the necessary plans of the intended building, executed by the Office of Woods and Works, were submitted to and have been approved of by her Majesty. The building, which will be erected at the cost of about 1,500*l.*, will have a frontage of 110 feet. It will be composed of red bricks, with a slated roof. In its centre will be two dwelling-houses for the use of the master and mistress, who will be appointed by the Queen, with salaries paid out of the privy purse. Each house will contain two bed-rooms and a sitting-room about 15 feet square, with necessary conveniences. Two school-rooms, 21 feet long and 16 feet wide (one for boys and the other for girls, the children of those employed in the Royal parks), will be erected at the sides of the residences of the master and mistress. The flooring will be laid with Hertfordshire tiles, black and white alternately. The ends of the gabels of the two school-rooms will have ornamental barge-boarding, as will also the three principal entrances. The school-rooms, which will be 13 feet in height, will each contain eight large casements.

By the terms of the contract, which has been taken by Messrs. Bedborough and Jenner, of Windsor, the building is to be completed within three months. The expense of keeping up this praiseworthy establishment will be defrayed by her Majesty and his Royal Highness Prince Albert.

NEWARK CASTLE.—The ruins of this once renowned edifice are now undergoing a thorough renovation at the expense of government. Workmen are now employed in strengthening the foundation, in throwing open the grand northern entrance so as to expose to view from the road the interior of the castle, and in knocking out the composition of bricks and mortar with which the ruthless hand of modern innovation has blocked up some of the beautiful windows. These improvements, when completed, will no doubt render these ruins worthy the attention of the archæologians. It has long been said that the castle crypt is connected with the priory, a building nearly half a mile distant, by a subterranean passage. The grounds for this rumour, we understand, are to be investigated.—*Lincolnshire Chronicle.*

TIMBER—ITS TREATMENT AND USES.

BY JAMES WYLSON.

(*Continued from p.* 553.)

127. WILLOW.—Of this genus there are many varieties; indeed thirty are enumerated; amongst the best known are the following:—the White, or Huntingdon willow; the Weeping, or Babylonian willow; the Crack, sometimes called the red-wood, willow; the Russell, or Duke of Bedford's, willow; the Goat willow; and the Osier. All the species are commonly propagated by cuttings, or by offsets in the spring: they grow freely, generally delighting in a moist soil, of almost any description.

128. The *White Willow* is esteemed the finest of its species: it grows naturally to a large size, frequently with much graceful and picturesque beauty; its common haunts are the margins of rivers and minor streams, defining their course in the distant landscape; also the woods and hedge-rows in low, sheltered, and rural districts, where the soil happens to be of a moist description: its foliage has a whitish grey hue; the leaves lance-shaped and serrated, having both sides clothed with silky hairs, which impart the whitish tone to the tree—especially when its leaves are shaken by the passing wind, and glistening in the sunbeam. It is propagated with great facility by cuttings, branches as much as 8 feet long and 3 inches diameter taking root readily; but shoots of one or two years' growth, and about 2 feet long, are preferred, as producing the finest trees. The timber is of a good description, very white, not very durable; its peculiarly clean appearance recommends it for forming milk-pails, and for similar purposes, where that quality is desirable; young, or coppice-wood, is formed into hoops, the light handles of hay-rakes, hoes, &c.; the bark contains a large proportion of tannin, and is sometimes used as a substitute for Peruvian bark.

129. The *Weeping Willow* is of all the willow kind the most beautiful and arresting, forming an admirable accompaniment to any piece of smooth water, whether lake or winding brook; the reflection of its long, slender, and elegant tresses, which overhang, bend down to, and dip their ends in, the water, discovering additional beauty within its glassy surface; to a cascade, fountain, or rustic seat, it lends an essential charm; it is also frequently found in churchyards and cemeteries, scenes with whose chastened character it appears in peculiar harmony, whether drooping over the simple turf-clad grave, or forming an accessary to the urn, or more aspiring obelisk. It is of comparatively recent introduction, the one which Pope with his own hands planted in his garden at Twickenham, from twigs forming a Levantine fig-basket (now some years since cut down), being said to be the first planted in this country: it attains a large size, and lives to a considerable age: its leaves are narrow, spear-shaped, serrated, and smooth; its boughs long and pendulous, discharging from their points, in misty weather, drops of water, literally justifying the appellation by which the tree is distinguished. Of the wood, hurdles are made, which are found to be durable, and to resist long the alternations of wet and dry; also handles for hatchets and other tools, rake-teeth, &c.

130. The *Crack Willow*, like the rest of its tribe, is of quick growth, and becomes a tolerably tall tree, resembling, in many respects, the white willow: its foliage is graceful, and appearance altogether pleasing; its leaves very long, oval, lanceolate, serrated, smooth, and of a shining green on both sides, wider than those of the white willow, and with toothed glandular foot-stalks. Its wood is light, pliant, and tough, and of a pink or salmon colour: some are of opinion that it is almost valueless; whilst others assert that it has long been used in Scotland for marine carpentry, and aver that for small fast-sailing war-vessels, its characteristic properties render it unexceptionable. The tree is stated to make excellent pollards, furnishing every five or six years a large crop of poles, indispensable to the farmer. It derives its distinctive appellation from the brittle nature of the small shoots, which, if struck sharply, will break off at their springing.

131. The *Russell Willow* attains a great size, is in appearance and nature similar to those above described, resembling much the crack willow in its foliage: its wood is fully equal to that of any of the others in toughness, strength, durability, and to possess in its fibres a strong lateral cohesion, peculiarly exempt from splitting; forming good joists, and, for manufactories and similar places where toughness is desirable, very excellent flooring; the same property rendering it also a capital lining for stone-carts and barrows; it is also of slow combustion, having the good property of being little liable to take fire.

132. The *Goat Willow*, or large-leaved sallow, will attain, under favourable circumstances, a height of 30 or 40 feet, growing in almost any soil, but preferring a dry loam, in which it flourishes to its greatest perfection; it is readily distinguished from all others of its species by its large ovate or orbicular leaves, which are waved on the margin, indented towards the upper end, pointed, wrinkled, and dark green above, but downy and of a pale glaucous colour beneath. It has numerous nearly sessile catkins, which, expanding much earlier than the foliage, still recommend the tree to the notice of the lower classes, and to young people, who carry branches of it on the Sunday preceding Easter, under the honorary denomination of *palm*; the early walk undertaken for procuring it being denominated "*to go palming.*" It ripens its seed readily, and propagates itself extensively. In some parts it bears the name of *Sough*, which, indeed, is in Scotland the common name for all the willow kind. Its wood is elastic and tough, fine and smooth in grain, and of a pinkish white colour.

133. The *Osier*, or wicker variety, although we may simply mention it, does not reach the rank of a tree, but consists of slender and pliant twigs, cultivated in large crops in marshy places for the purposes of the basket-maker, for which they are properly adapted; they are raised from established *stools*, and pay the owner as well as any other crop upon his farm. The wood of willows is, from its extreme pliability, rendered subservient in the milliner's art, being cut into thin strips, which are woven and formed into bonnet-shapes; they are also dyed and curled, and put to various ornamental uses, as filling fire-grates in summer.

134. OLIVE.—Of this tree as many as eighteen kinds are enumerated; but it appears that the chief distinction lies between the wild and the cultivated, the former of which is dwarfish, useless, and neglected, while the latter is eagerly propagated, valuable, and highly-esteemed. It abounds in the countries of the East, appearing to have been originally found in Asia, and thence transplanted into southern Europe. In the latter, and in Africa, it does not rise spontaneously as in Asia, but requires diligent attention in its cultivation: it is especially abundant in Syria and Palestine, springing up with its ancient freshness in the valleys of the Holy Land, cresting the mountains of Judea, and vindicating its paternal soil on the same spot at this day which bore the name of Mount Olivet and Mount of Olives eleven centuries before the Christian era; uninterrupted by the succession of Hebrews, Assyrians, Romans, Moslems, and Christians. During the siege of Jerusalem, all the trees growing near were cut down, but of course the roots were left undisturbed. It flourishes well on the shores of the Mediterranean; in several of the islands of that sea it is cultivated with much advantage, the wealth of their inhabitants depending in a great measure on its prosperity. In Greece it flourishes, contributing not a little to the riches of the infant state. In Great Britain it grows readily, especially in the south, bringing forth fruit on the wall if protected during frost. In Egypt the great endeavours of Ibrahim Pacha to promote its cultivation, with a view of increasing the revenue, have all but failed, owing to the indolent and sluggish habits of the people.

135. The tree is an evergreen, and runs up to a height of 20 or 30 feet; its trunk is knotty, its bark smooth and of an ash-colour; its leaves oblong, not unlike those of the willow, dark green above, and whitish beneath. In June its blossoms come forth in bunches, small, white, delicate, and beautiful, slenderly attached to the tree, and falling off in showers by the gentle breeze; the fruit which succeeds is of an oval form, at first green, then pale, and ultimately black. The disparity between the produce of the wild and the cultivated olive has been compared to that between the crab

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